

THE CLAIMS

1. A flexible spine stabilization system comprising:
 - a first rod having a first end portion and a second end portion;
 - 5 a first flexible element having at least a first slit formed therein, wherein said first flexible element is disposed between the first and second end portions, wherein a first flexible element is integrally formed between said first and second rod portions, and wherein the first flexible element permits motion of the first end portion relative to the second end portion;
 - a first fastener capable of connecting with the first end portion; and
 - 10 a second fastener capable of connecting with the second end portion.
2. The flexible spine stabilization system of claim 1, wherein the first end portion and the second end portions of the first rod comprise a tubular structure.
- 15 3. The flexible spine stabilization system of claim 1, wherein the first end portion and the second end portions of the first rod are substantially solid.
4. The flexible spine stabilization system of claim 1, wherein the slit in the first flexible element forms a helical pattern around a portion of the first rod.
- 20 5. The flexible spine stabilization system of claim 3, wherein the first flexible element is curved in the neutral position to accommodate the lordosis in the spine.
6. The flexible spine stabilization system of claim 3, wherein the first flexible element limits
25 motion of the first end portion relative to the second end portion from about 1° to about 30° in all planes.
7. The flexible spine stabilization system of claim 3, wherein the first flexible element limits
30 motion of the first end portion relative to the second end portion from about 0° to about 3° in all planes.

8. The flexible spine stabilization system of claim 3, wherein the first flexible element limits rotation of the first end portion relative to the second end portion from about 1° to about 30°.
9. The flexible spine stabilization system of claim 8, wherein the first flexible element limits rotation of the first end portion relative to the second end portion from about 1° to about 6°.
10. The flexible spine stabilization system of claim 3, wherein the first flexible element limits rotation of the first end portion relative to the second end portion from about 0° to about 3°.
11. The flexible spine stabilization system of claim 10, wherein the first flexible element prevents rotation of the first end portion relative to the second end portion.
12. The flexible spine stabilization system of claim 3, wherein the first flexible element limits flexion-extension of the first end portion relative to the second end portion from about 0° to about 30°.
13. The flexible spine stabilization system of claim 12, wherein the first flexible element limits flexion-extension of the first end portion relative to the second end portion from about 0° to about 3°.
14. The flexible spine stabilization system of claim 13, wherein the first flexible element limits flexion-extension of the first end portion relative to the second end portion from about 3° to about 30°.
15. The flexible spine stabilization system of claim 3, wherein the first flexible element limits lateral bending of the first end portion relative to the second end portion from about 0° to about 30°.
16. The flexible spine stabilization system of claim 15, wherein the first flexible element limits lateral bending of the first end portion relative to the second end portion from about 0° to about 3°.

16. The flexible spine stabilization system of claim 15, wherein the first flexible element limits lateral bending of the first end portion relative to the second end portion from about 3° to about 30°.

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17. The flexible spine stabilization system of claim 1, wherein the first flexible element limits axial compression of the first end portion relative to the second end portion from about 0 mm to about 7 mm.

10 18. The flexible spine stabilization system of claim 17, wherein the first flexible element limits axial compression of the first end portion relative to the second end portion from about 0.5 mm to about 7 mm.

15 19. The flexible spine stabilization system of claim 18, wherein the first flexible element limits axial compression of the first end portion relative to the second end portion from about 0 mm to about 1 mm.

20. The flexible spine stabilization system of claim 19, wherein the depth of the first slit is from about 20 percent to about 99 percent of the radius of the rod.

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21. The flexible spine stabilization system of claim 20, wherein the depth of the first slit is from about 50 percent to about 80 percent of the radius of the rod.

25 22. The flexible spine stabilization system of claim 1, wherein the first flexible element further comprises a second slit formed therein.

23. The flexible spine stabilization system of claim 22, wherein the first slit and the second slit in the first flexible element form helical patterns around a portion of the first rod.

30 24. The flexible spine stabilization system of claim 23, wherein at least a portion of the first slit and the second slit are disposed in the same location on the first rod.

25. The flexible spine stabilization system of claim 23, wherein the direction of the helical pattern of the first slit is the same as the direction of the helical pattern of the second slit.
- 5 26. The flexible spine stabilization system of claim 23, wherein the direction of the helical pattern of the first slit is opposite from the direction of the helical pattern of the second slit.
27. The flexible spine stabilization system of claim 1, wherein the first flexible element forms at least a portion of a transconnector that connects two longitudinal rods.
- 10 28. The flexible spine stabilization system of claim 1, wherein the first and second fasteners are bone fasteners.
29. The flexible spine stabilization system of claim 1, wherein the first slit formed in the first
15 flexible element extends completely through the rod.
30. The flexible spine stabilization system of claim 1, wherein the depth of the first slit is from about 20 percent to about 95 percent of the radius of the rod.
- 20 31. The flexible spine stabilization system of claim 30, wherein the depth of the first slit is from about 50 percent to about 80 percent of the radius of the rod.